

Amendments to the Claims

Please amend Claims 1, 2, 5, 6 and 8-10. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently amended) A method for controlling transfer of one or more liquid or solid substances from a first cavity to a second cavity wherein the first cavity is connected to the second cavity by an intermediate cavity, comprising the steps of:
 - a) introducing into the first cavity said one or more liquid or solid substances whose transfer is to be controlled, ~~and holding said one or more liquid or solid substances in the first cavity[[,]] wherein the first cavity is connected to the second cavity by an intermediate cavity[[,]] and wherein the intermediate cavity is~~ provided with a separation medium comprising a gas or liquid material which prevents transfer of said one or more liquid or solid substances into the intermediate cavity; and
 - b) replacing the separation medium in the intermediate cavity with a connection medium comprising a liquid material by ~~introducing~~ delivering said connection medium into the intermediate cavity through one or more channels separately connected to the intermediate cavity, wherein the delivery of said connection medium in the intermediate cavity allows transfer of said one or more liquid or solid substances ~~into the intermediate cavity; and wherein said one or more liquid or solid substances are transferred~~ from the first cavity to the second cavity via the intermediate cavity,

thereby controlling transfer of one or more liquid or solid substances.

2. (Currently amended) The method of claim 1, wherein at least one of the following steps (1) to (3) is carried out in the first and/or second cavity:

- (1) separating said one or more liquid or solid substances by applying a driving force selected from the group consisting of voltage, centrifugal force, capillarity, magnetic force, electroosmotic flow and mechanical pumping;
 - (2) reacting said one or more liquid or solid substances; and
 - (3) detecting said one or more liquid or solid substances.
3. (Previously presented) The method of claim 1, wherein the one or more liquid or solid substances are separated by electrophoresis in the first and/or second cavities.
4. (Previously presented) The method of claim 1, wherein the first cavity, the second cavity, and the intermediate cavity comprise a groove or tube configuration; the separation medium is air; and the connection medium is an electroconductive liquid solution, wherein said connection medium is introduced into the intermediate cavity by capillarity.
5. (Currently amended) The method of claim 1, wherein said one or more substances whose transfer is to be controlled are liquid; the separation medium is a liquid material immiscible to said one or more liquid substances whose transfer is to be controlled; the connection medium is miscible with the one or more liquid substances whose transfer is to be controlled; and said ~~separation~~ connection medium is ~~introduced~~ delivered into the intermediate cavity through the one or more channels connected to the intermediate cavity by micropump or electroosmotic flow.
6. (Currently amended) A device for controlling transfer of one or more liquid or solid substances, comprising:
 - a) a first cavity for holding said one or more liquid or solid substances;
 - b) a second cavity for receiving said one or more liquid or solid substances; and
 - c) an intermediate cavity ~~for~~ connecting the first cavity and the second cavity, ~~for holding~~ the intermediate cavity for holding a separation medium comprising a gas or liquid material which prevents transfer of said one or

more liquid or solid substances from the first cavity[[,]] and for receiving and holding a connection medium comprising a liquid which allows transfer of said one or more liquid or solid substances into the intermediate cavity, and

d) one or more channels connected to the intermediate cavity for delivering the connection medium into the intermediate cavity,

wherein the separation medium is replaced with a connection medium in the intermediate cavity via the one or more channels, and the ~~introduction~~ delivery of the connection medium to the intermediate cavity enables transfer of said one or more liquid or solid substances retained in the first cavity to ~~the intermediate cavity~~ and the second cavity via the intermediate cavity.

7. (Previously presented) The device of claim 6, wherein the first cavity and/or the second cavity comprises at least one of the following mechanisms (1) to (3):
- (1) a mechanism for separating said one or more liquid or solid substances by applying a driving force selected from the group consisting of voltage, centrifugal force, capillarity, magnetic force, electroosmotic flow and mechanical pumping;
 - (2) a mechanism for reacting said one or more liquid or solid substances; and
 - (3) a mechanism for detecting said one or more liquid or solid substances.
8. (Currently amended) A two-dimensional electrophoretic device comprising:
- a) a first cavity for holding a first electrophoretic medium;
 - b) a second cavity for holding a second electrophoretic medium;
 - c) an intermediate cavity for connecting the first cavity and the second cavity, for holding a separation medium comprising a gas or liquid material which prevents transfer of one or more proteins to be electrophoresed from the first electrophoretic medium to the second electrophoretic medium, and for holding a connection medium comprising a liquid material which

allows transfer of said one or more proteins from the first cavity to the second cavity via the intermediate cavity,
~~wherein the separation medium is replaced with the connection medium,~~
~~and the introduction of the connection medium into the intermediate cavity~~
~~enables transfer of said one or more proteins to be electrophoresed in the~~
~~electrophoretic medium retained in the first cavity, to the intermediate~~
~~cavity and the second cavity; and~~

- d) one or more channels connected to the intermediate cavity for delivering the connection medium into the intermediate cavity; and
- e) a plurality of electrodes.

- 9. (Currently amended) The two-dimensional electrophoretic device of claim 8, wherein the connection medium is introduced into the intermediate cavity via the one or more channels connected to the intermediate cavity by capillary action.
- 10. (Currently amended) A method for conducting two-dimensional electrophoresis, comprising the steps of:
 - a) introducing one or more proteins to be electrophoresed into the first cavity of the electrophoretic device of claim 8;
 - b) conducting electrophoresis in the first cavity of the electrophoretic device of claim 8;
 - c) replacing a separation medium comprising air by introducing a liquid connection medium into an intermediate cavity through one or more channels separately connected to the intermediate cavity, which allows transfer of said one or more proteins to be electrophoresed into the second cavity via the intermediate cavity of the electrophoretic device of claim 8; and
 - d) conducting electrophoresis of said one or more proteins to be electrophoresed in the second cavity of the electrophoretic device of claim 8.

11. (Previously presented) The device of claim 6, wherein the intermediate cavity has a width and depth ranging from about 1 to about 2000 μm .
12. (Previously presented) The device of claim 11, wherein the intermediate cavity has a width and depth ranging from about 10 to about 100 μm .
13. (Previously presented) The device of claim 6, further comprising a plurality of electrodes.